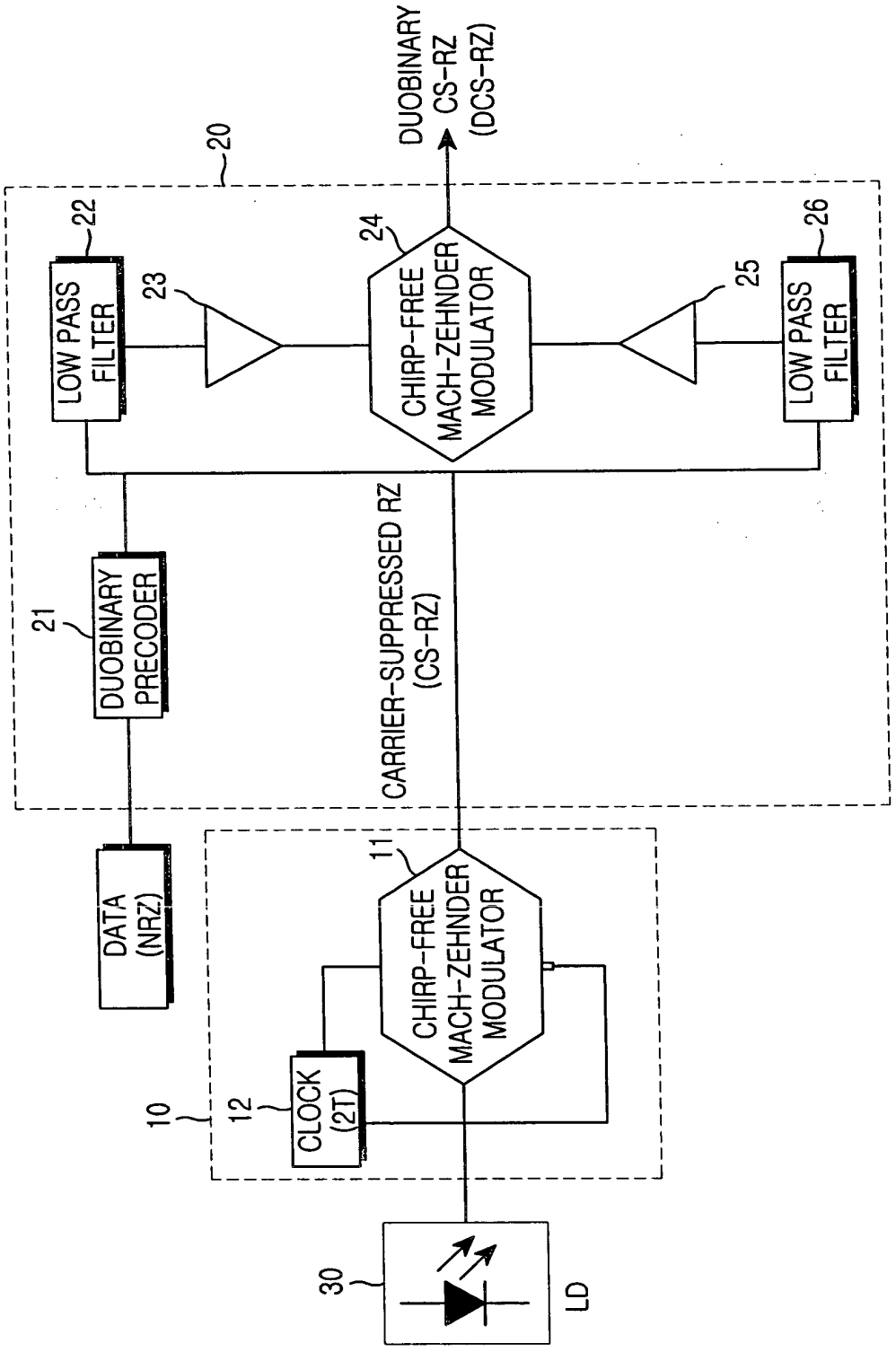

FIG.1
(PRIOR ART)

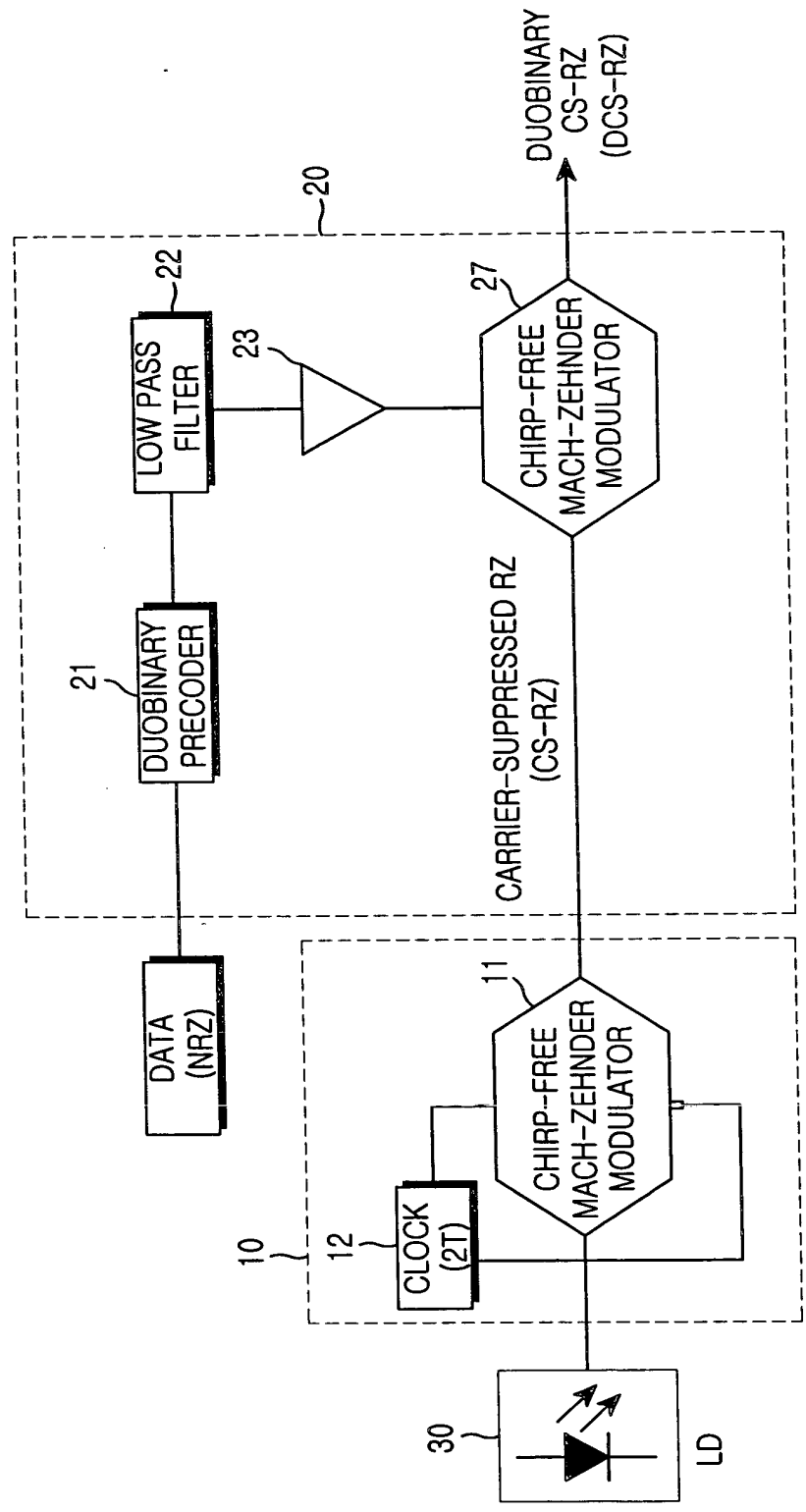

FIG.2
(PRIOR ART)

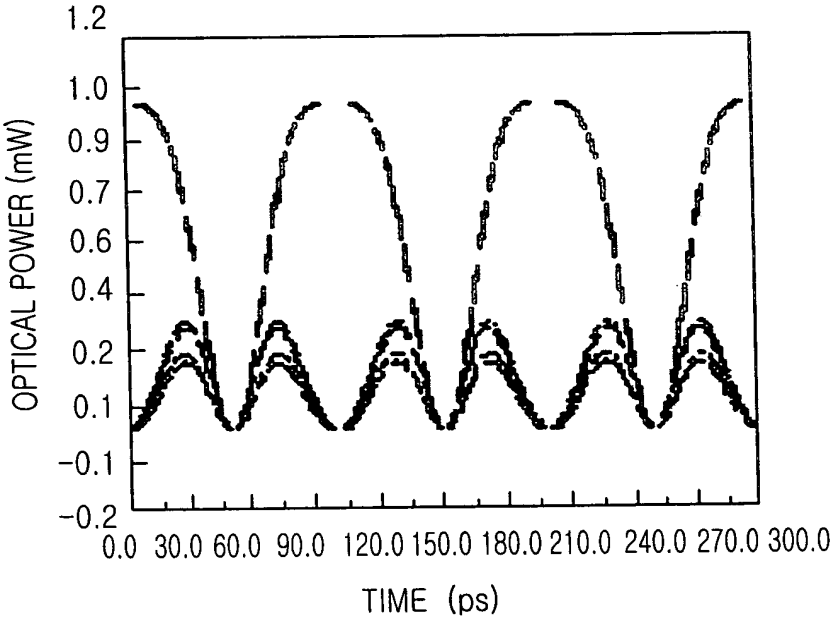

FIG.3A
(PRIOR ART)

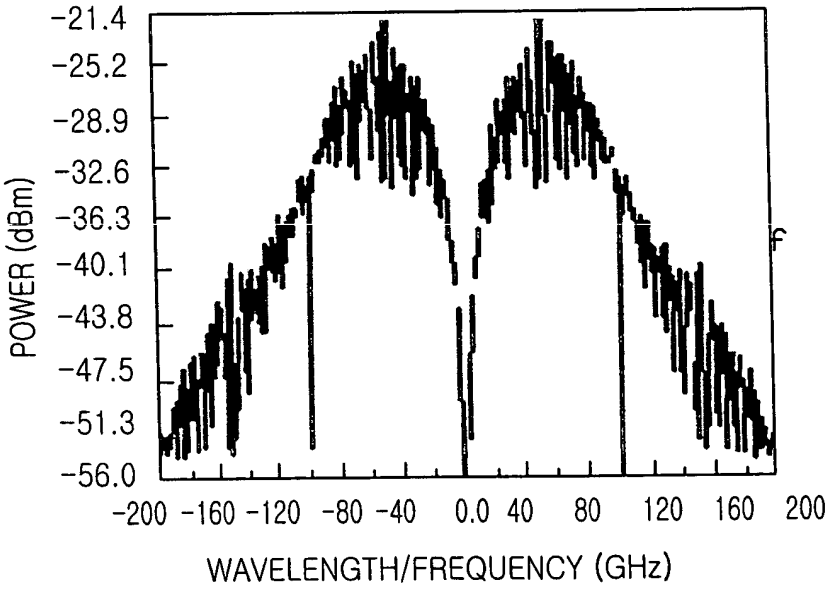

FIG.3B
(PRIOR ART)

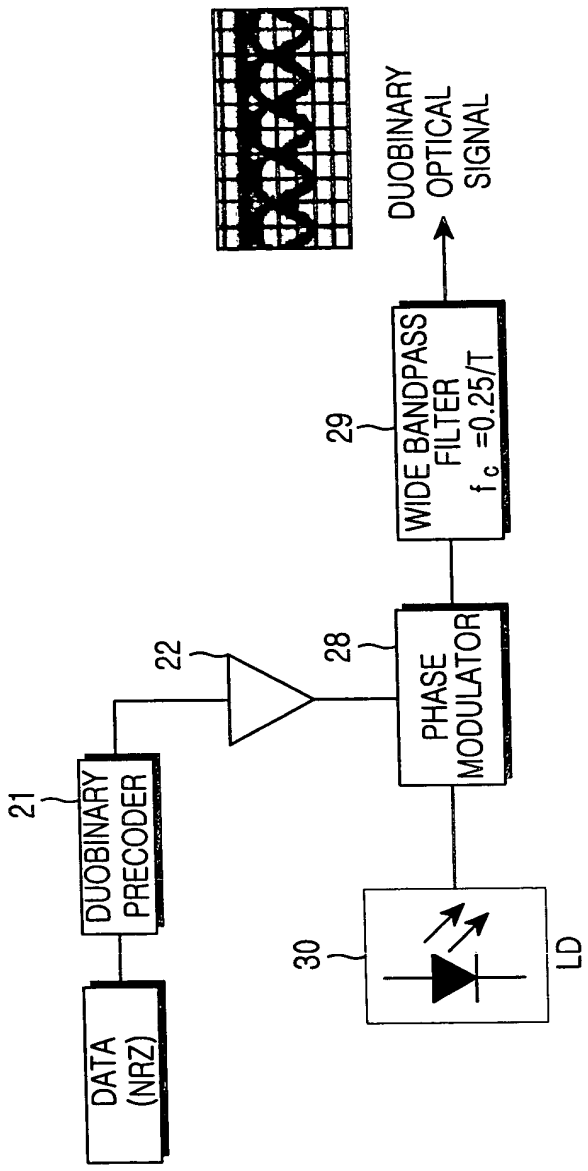

FIG.4
(PRIOR ART)

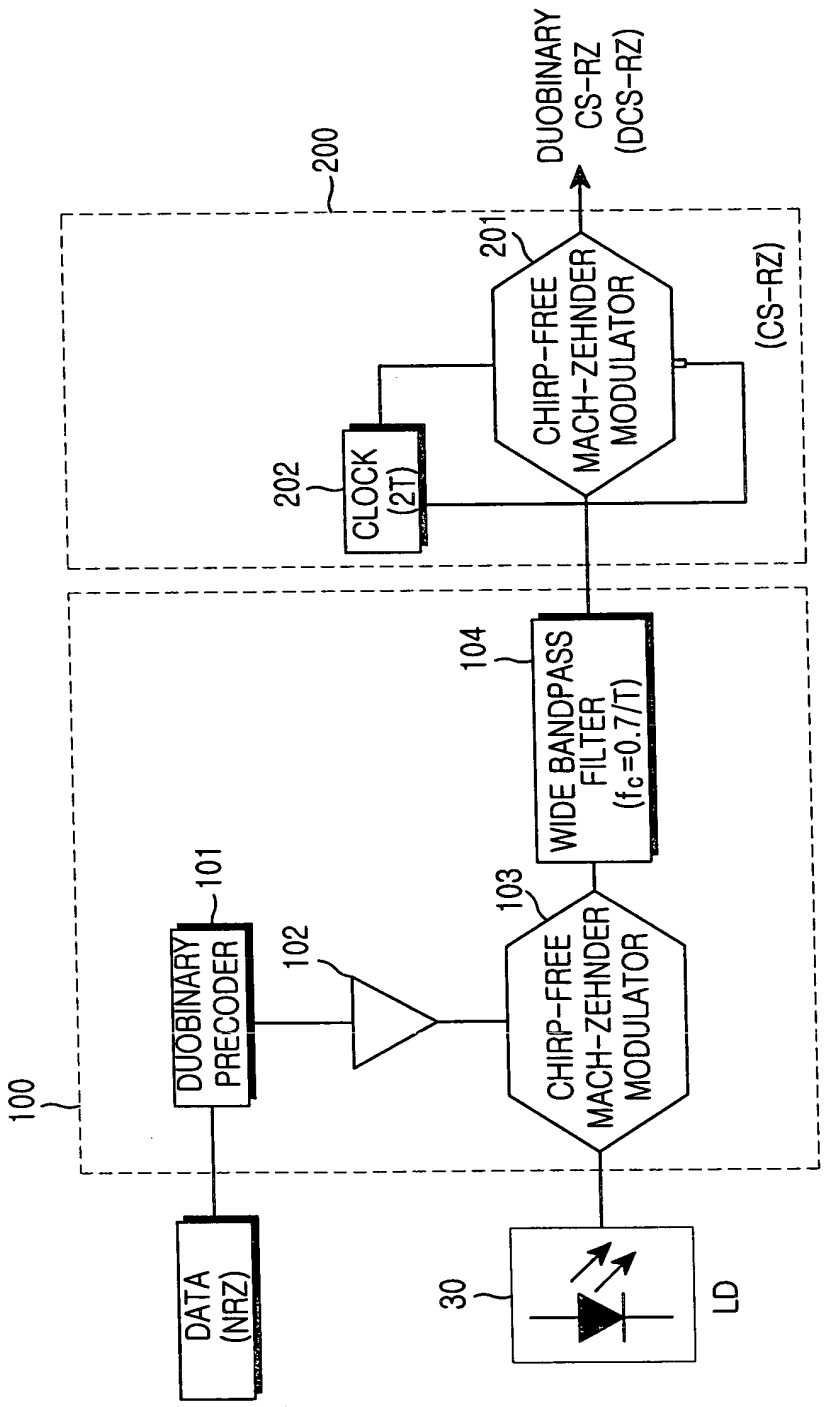
100
DUOBINARY PRECODER
101
102
CHIRP-FREE MACH-ZEHNDER MODULATOR
103
WIDE BANDPASS FILTER (f_c=0.7/T)
104
DATA (NRZ)
30
LD
200
CHIRP-FREE MACH-ZEHNDER MODULATOR
201
CLOCK (2T)
202
(CS-RZ)
DUOBINARY CS-RZ (DCS-RZ)

FIG.5

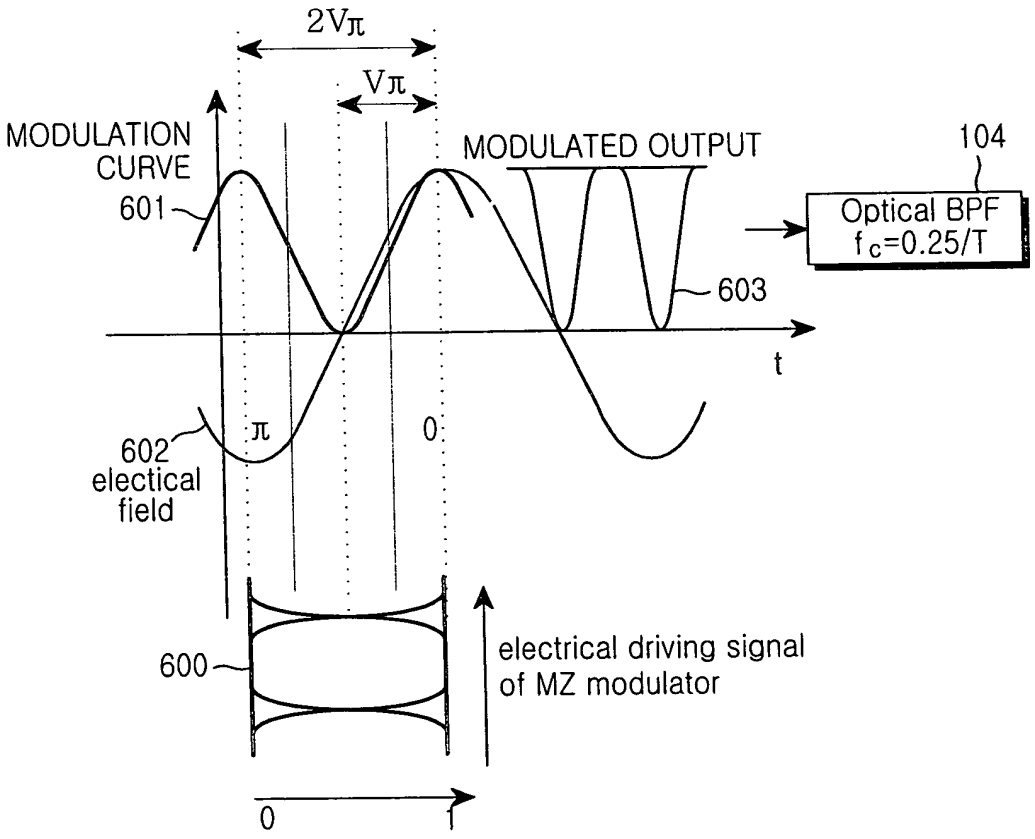
2Vπ
Vπ
MODULATION CURVE
601
MODULATED OUTPUT
104
Optical BPF
fc=0.25/T
603
t
π
0
602
electical field
600
electrical driving signal of MZ modulator
0
t

FIG.6A

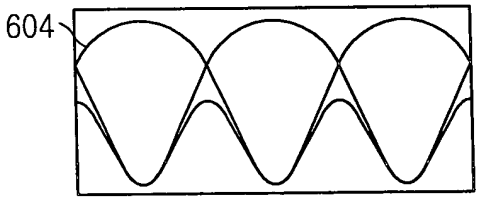
604

FIG.6B

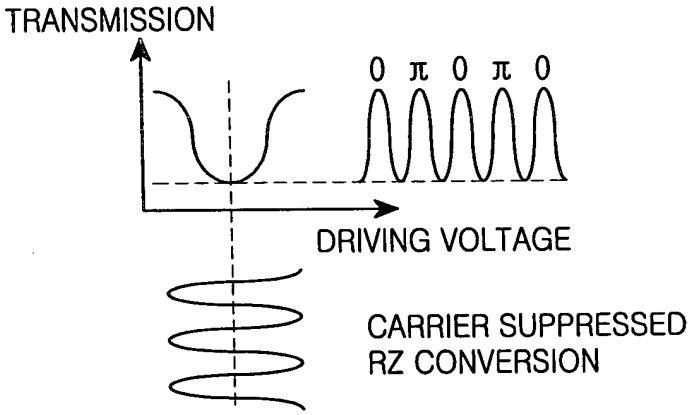
TRANSMISSION
0 π 0 π 0
DRIVING VOLTAGE
CARRIER SUPPRESSED
RZ CONVERSION

FIG.6C

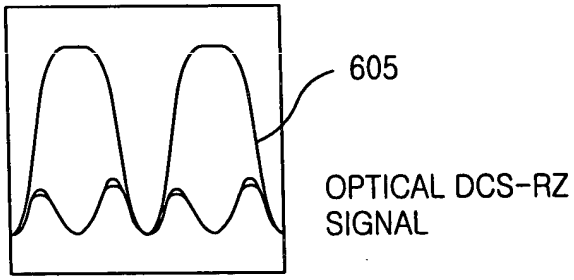
605
OPTICAL DCS-RZ
SIGNAL

FIG.6D

INPUT DATA		0	1	0	0	0	0	1	0	1	0	0
PRECODING DATA	0	1	1	0	1	0	1	1	0	0	1	0
MODULATED INTENSITY	1	1	1	1	1	1	1	1	1	1	1	1
MODULATED PHASE	π	0	0	π	0	π	0	0	π	π	0	π
FILTER OUTPUT		0	1	0	0	0	0	1	0	1	0	0

FIG.7A

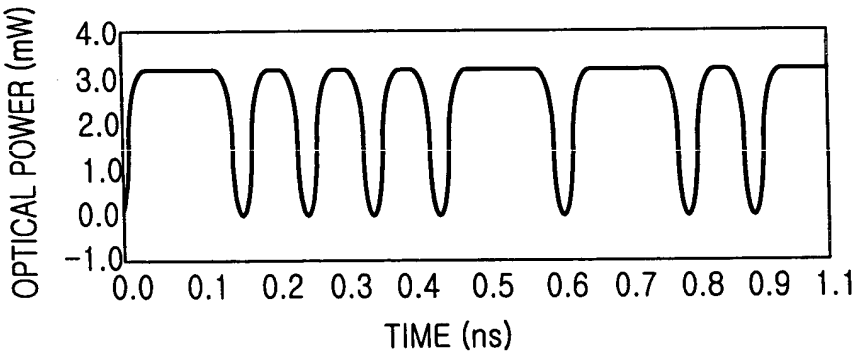

FIG.7B

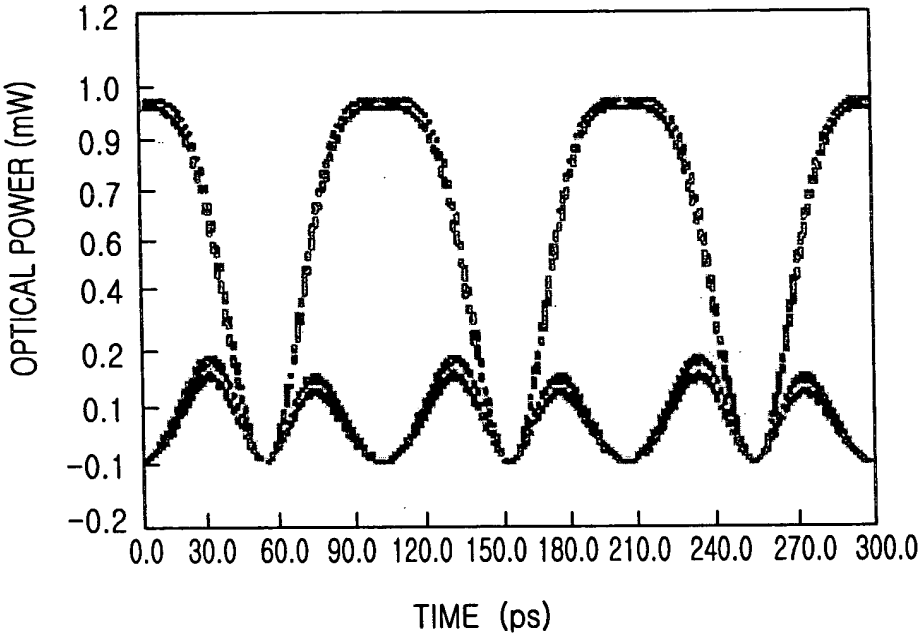
1.2
1.0
0.9
0.7
0.6
0.4
0.2
0.1
-0.1
-0.2
OPTICAL POWER (mW)
0.0 30.0 60.0 90.0 120.0 150.0 180.0 210.0 240.0 270.0 300.0
TIME (ps)

FIG.8A

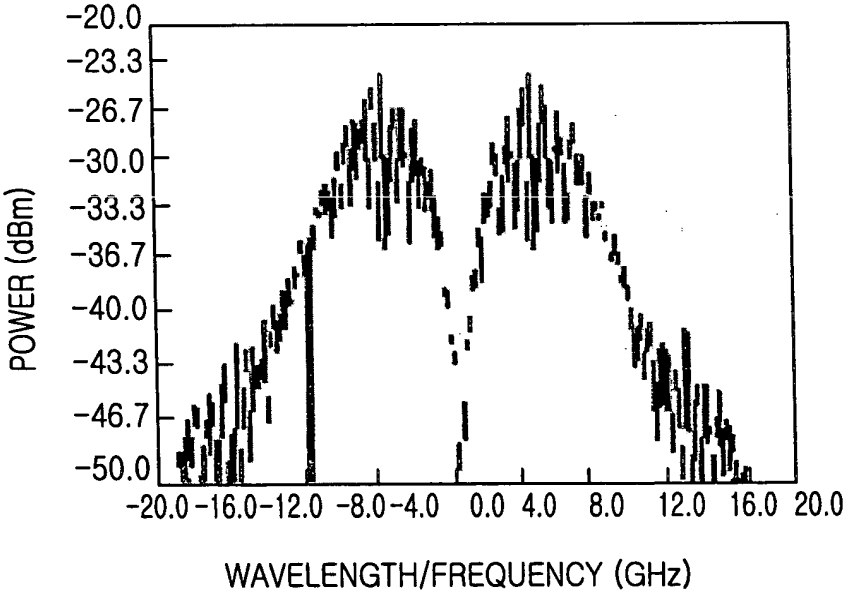
-20.0
-23.3
-26.7
-30.0
-33.3
-36.7
-40.0
-43.3
-46.7
-50.0
POWER (dBm)
-20.0 -16.0 -12.0 -8.0 -4.0 0.0 4.0 8.0 12.0 16.0 20.0
WAVELENGTH/FREQUENCY (GHz)

FIG.8B